
Permit Conditions for X-ray Producing Equipment

Background

Authority to possess and operate x-ray producing equipment is granted to an individual by the U.S. Department of Agriculture (USDA) Radiation Safety Committee after the user's application has been reviewed and approved by the USDA Radiation Safety Staff (RSS).

It is the responsibility of the Permit Holder named on the Radiation Source Permit to comply with all safety and regulatory requirements of the USDA Radiation Safety Program.

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Approved:

September 4, 1996
Date

By:

/s/ _____
John T. Jensen
Director, Radiation Safety Staff

Acquisition Purchase orders for x-ray producing equipment need to be approved by the RSS prior to the order being placed by a purchasing agent. Upon receipt of any x-ray unit, the following information must be submitted to the RSS:

- X-ray Producing Equipment Inventory Record (RSS-29);
- A copy of the manufacturer's information and specifications, such as a sales brochure.

Authorized Users Only the Permit Holder, or designee, are authorized to survey x-ray producing equipment; or to operate equipment where the x-ray beam is readily accessible.

Other individuals may operate x-ray producing equipment such as cabinet or baggage scanning equipment after they have received appropriate training from the Permit Holder.

Radiation Safety Considerations X-ray producing equipment must be operated in accordance with the manufacturer's instructions.

The requirements of the Radiation Control for Health and Safety Act of 1968, (21 CFR Part 1020) which is the enabling legislation for Federal and State radiation control programs, is the controlling legislation for this program.

Surveys Surveys for leakage radiation are to be performed upon installation, annually, upon significant modification or repair of the equipment, or when conditions indicate a potential problem. Radiation levels must not exceed 0.5 mR/hr when measured at a distance of 5 cm from any surface on the unit. Radiation surveys are generally aimed at detecting areas where x-rays could be leaking out through voids or breaks in the shielding. For this reason, a standard ratemeter having a thin window G-M probe or a pressurized ion chamber are adequate to detect a problem.

If excess radiation levels are detected, contact RSS for additional guidance

Posting of Signs and Labels All x-ray producing equipment must be labeled with a sign stating "Caution - this equipment produces x-rays when energized".

A fail-safe warning light or device with the words "x-rays on" must be located near any switch that energizes an x-ray tube.

Diffraction meters and x-ray fluorescence units must have a fail-safe warning light or sign that is illuminated when x-rays are being produced.

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X-ray Diffraction Systems	X-ray diffraction systems have the capability to cause permanent injury following a brief exposure to the primary beam. The most frequently reported injury is severe burns to the hands or fingers (often resulting in the loss of a finger) that occur during repair and alignment of the equipment.
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System interlocks must be operational at all times.

Personnel Dosimetry	Review of the dosimetry records by RSS demonstrate no occupational exposure to operators of cabinet, baggage, or parcel inspection x-ray systems. Therefore, no personnel monitoring is required.
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Inventory Control	The RSS conducts an annual audit of x-ray producing equipment. In conducting the audit, Permit Holders are asked to perform a visual inspection of the equipment and provide some information on the status of the unit. A copy of the most recent radiation survey must be attached to the audit form.
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Transfer and Disposal	The RSS must be notified of the transfer of any x-ray producing equipment to another USDA Permit Holder, or to an individual outside the USDA.
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The proper disposal of unused x-ray producing equipment is required. In older units, cooling oil in the high voltage supply or in the x-ray tube may contain PCBs. Also, lead may be present as shielding. These hazards must be investigated and controlled at the time of disposal.

Records Retention	The RSS maintains records of the purchase, transfer, and disposal of x-ray producing equipment as part of its overall inventory program.
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Records of radiation surveys and performance evaluations of the equipment are to be maintained by the Permit Holder for three years.

Questions	If there are any questions regarding the information in this document, contact:
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